In th Title:

Please make the following change in the title of the invention:

CIRCUIT ARRANGEMENT FOR GENERATING SQUARE PULSES AND IMPROVED COMPENSATION CURRENT SENSOR USING SAME

In the Claims:

Please cancel without prejudice claims 7 to 16 and add new claims 17 to 26:

17. A circuit arrangement for generating square pulses as a function of field intensity of a magnetic field, said circuit arrangement comprising

an edge-triggered flip-flop (1) having a trigger input;

at least one comparator (2) having a signal input (2a) and an output connected to the trigger input of the flip-flop (1);

a bridge comprising four bridge segments connected in series with each other and a transverse branch connected across said bridge between said bridge segments, wherein respective bridge segments comprise corresponding switches (7, 8, 9, 10), said transverse branch comprises an energy-storing element (3) alternately charged as a function of switching state of the edge-triggered flip-flop (1) and said energy-storing element (3) consists of a magnetic field probe (12) for detecting a magnetic field, which consists of an inductive resistor; and

at least one switching threshold resistor (4) connected in series with said energy-storing element (3), which is connected with said signal input (2a) of said at least one comparator (2), so that a voltage is applied to said signal input due to current flowing through the energy-storing element (3); and

wherein pairs (7,10 or 8; 9) of said switches on opposite sides of the transverse branch are connected by said flip-flop (1) in crossover fashion, so that said current flowing in said energy-storing element (3) is reversible, and wherein a junction point of the bridge to the at least one switching threshold resistor (4) is connected to said signal input (2a) of the at least one comparator (2).

18. The circuit arrangement as defined in claim 17, wherein said magnetic field is generated by a core (13) of a compensation current sensor.

19. The circuit arrangement as defined in claim 17, wherein said at least one comparator (2) is a digital gate.

20. The circuit arrangement as defined in 17, further comprising inverters (5,6) connected to outputs of said flip-flop (1) and wherein said respective switches (7, 8, 9, 10) are MOSFETs, one of said outputs of said flip-flop (1) is directly connected to a first (10) of said switches and indirectly to a second (7) of said switches via an inverter (5) and another of said outputs of said flip-flop (1) is directly connected to a third (9) of said switches and indirectly connected to a fourth (8) of said switches via another inverter (6), in order to switch said switches in said crossover fashion.

21. The circuit arrangement as defined in 17, wherein said transverse branch comprises a series resistor (11) connected in series with said energy-storing element (3) or said inductive resistor.

22. A compensation current sensor for measuring current flowing in an electrically conducting element, said compensation current sensor comprising

an annular core (13) with an air gap, through which an electrical conductor carrying a current to be measured passes;

an electrically conductive coil (14) wound around said annular core (13);

a magnetic field probe (12) arranged in said air gap of said annular core (13), said magnetic field probe consisting of an inductive resistor and comprising means for detecting a magnetic field in said air gap of said annular core; and

a controller (16) for generating a compensation current (I_A) passing through said coil (14);

wherein said controller (16) comprises a circuit arrangement for generating square pulses according to field intensity of said magnetic field of said annular core, said circuit arrangement comprising an edge-triggered flip-flop (1) having a trigger input; at least one comparator (2) having an output connected to the trigger input of the flip-flop (1); a bridge comprising four bridge segments connected in series with each other and a transverse branch connected across said bridge between said bridge segments, wherein respective bridge segments comprise corresponding switches (7, 8, 9, 10), said transverse branch comprises an nergy-storing element (3) alternately charged as a function of switching state

of the flip-flop (1) and said energy-storing element (3) consists of said magnetic field probe (12), which consists of an inductive resistor; and at least one switching threshold resistor (4) connected in series with said energy-storing element (3), which is connected with a signal input (2a) of said at least one comparator (2), so that a voltage is applied to said signal input due to current flowing through the energy-storing element (3); wherein said switches are connected in pairs in crossover fashion by said flip-flop (1), so that said current flowing in said energy-storing element (3) is reversible, and wherein a junction point of the bridge to the at least one switching threshold resistor (4) is connected to said signal input (2a) of the at least one comparator (2).

23. The compensation current sensor as defined in claim 22, wherein said controller (16) includes means for generating a compensation current (I_A) from a pulse-duty factor of said square pulses and means for conducting said compensation current (I_A) through said coil (14) wound around said annular core (13), whereby said field intensity of said magnetic field is nearly zero.

24. The compensation current sensor as defined in claim 22, wherein said at least one comparator (2) is a digital gate.

25. The compensation current sensor as defined in claim 22, wherein said circuit arrangement includes inverters (5,6) connected to outputs of said flip-flop (1) and wherein said respective switches (7, 8, 9, 10) are MOSFETs, one of said outputs

of said flip-flop (1) is directly connected to a first (10) of said switches and indirectly to a second (7) of said switches via an inverter (5) and another of said outputs of said flip-flop (1) is directly connected to a third (9) of said switches and indirectly connected to a fourth (8) of said switches via another inverter (6) connected to another of said outputs of said flip-flop (1), in order to switch said switches in said crossover fashion.

26. The compensation current sensor as defined in claim 22, wherein said transverse branch comprises a series resistor (11) connected in series with said energy-storing element or said inductive resistor.